UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/374,079	08/12/1999	TRACY D. HARMER	TI-27445	3296

23494   7590   10/09/2003

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EXAMINER
BAKER, STEPHEN M

ART UNIT	PAPER NUMBER
2133	

DATE MAILED: 10/09/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	**Applicant(s)**
Office Action Summary	09/374,079	HARMER ET AL.
	Examiner	**Art Unit**	
	Stephen M. Baker	2133	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

> A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
> THE MAILING DATE OF THIS COMMUNICATION.
> - Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
>   after SIX (6) MONTHS from the mailing date of this communication.
> - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
> - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
> - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
> - Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
>   earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 December 2002* .

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10 and 12* is/are pending in the application.

     4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10 and 12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

     If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

     a)☐ All b)☐ Some * c)☐ None of:

         1.☐ Certified copies of the priority documents have been received.

         2.☐ Certified copies of the priority documents have been received in Application No. _____ .

         3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
            application from the International Bureau (PCT Rule 17.2(a)).

     * See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

     a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)   4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)   5) ☐ Notice of Informal Patent Application (PTO-152)

3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .   6) ☐ Other: .

DETAILED ACTION

Response to Arguments

1.   In view of the response filed on 03 July 2003, PROSECUTION IS HEREBY

REOPENED. New rejections are set forth below.

To avoid abandonment of the application, appellant must exercise one of the

following two options:

(1) file a reply under 37 CFR 1.111; or,

(2) request reinstatement of the appeal.

If reinstatement of the appeal is requested, such request must be accompanied

by a supplemental appeal brief, but no new amendments, affidavits (37 CFR 1.130,

1.131 or 1.132) or other evidence are permitted. See 37 CFR 1.193(b)(2).

2.   Applicant's arguments with respect to claims 1-10 and 12 have been considered

but are moot in view of the new grounds of rejection.

Claim Rejections - 35 USC § 102

3.   The text of those sections of Title 35, U.S. Code not included in this action can

be found in a prior Office action.

4.   Claims 1, 3, 5 and 6 are rejected under 35 U.S.C. 102(e) as being anticipated by

U.S. Patent No. 6,223,321 to Nasu *et al.* ("Nasu").

Nasu discloses floppy disk drive data error correction operations distributed

between disk drive hardware and host software. Nasu shows a computer system with

one embodiment of the invention (Fig. 2) including a "host computer" (10) with a "CPU"

(13), and floppy disk "mass storage device" (1).   Nasu's C1 correction unit (3) provides

"ECC hardware associated with said mass storage device". Nasu's host computer (10)

requires "software instructions for execution by said CPU for performing at least some

ECC instructions on data read from said mass storage device" (col. 8, lines 25-26 and

63-67). Nasu's "software instructions" are apparently part of a floppy disk device-

specific control program for enabling a computer to work with the floppy disk device,

and thus are apparently part of a "device driver". For general reference, see the

definitions of "driver" in "Computer Dictionary" by Microsoft Press, previously provided

by the examiner.

Regarding claim 3, Nasu's host-based ECC instructions presumably correct the

disk data after it is read to main memory (host RAM).

Regarding claims 5 and 6, in another embodiment of Nasu's invention (Fig. 1) a

non-zero C2 syndrome serves as an "error flag" sent to the host (10).

5.   Claims 1-3 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S.

Patent No. 6,252,961 to Hogan ("Hogan").

Hogan discloses disk drive data error correction operations distributed between

disk drive hardware and host software (col. 1, lines 63-65). The disk drive can be a

hard drive (col. 1, lines 20 and 50). Hogan shows a computer system including a "host

computer" (14) with a "CPU", and a disk drive "mass storage device" (16).   Hogan's

disk drive provides "ECC hardware associated with said mass storage device" (co. 4,

lines 66+). Hogan's host computer (14) requires "software instructions for execution by

said CPU for performing at least some ECC instructions on data read from said mass

storage device" (col. 3, lines 23-24). Hogan's "software instructions" are apparently part

of a disk device-specific control program for enabling a computer to work with the disk

device, and thus are apparently part of a "device driver".

Regarding claim 3, Hogan's host (14) presumably corrects the data in host RAM.

Claim Rejections - 35 USC § 103

6.   Claims 4 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Nasu.

Regarding claim 4, Nasu doesn't specify hardware-based ECC encoding ("data

integrity determination information") the disk drive data, although hardware-based ECC

decoding (3) is provided.

Official Notice is given that the hardware-sharing advantage of using a hardware-

based ECC encoder within a combined hardware-based encoder/decoder (i.e. using

codec hardware) where a hardware-based ECC decoder is already required was well

known at the time the invention was made. It would have been obvious to a person

having ordinary skill in the art at the time the invention was made to provide Nasu's

system with hardware-based ECC encoding for the disk drive. Such a provision would

have been obvious because the hardware-sharing advantage of using codec hardware

for required ECC encoding where a hardware-based ECC decoder is already called for

was already well known.

7.   Claims 7-9, 10 and 12 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Nasu in view of U.S. Patent No. 4,486,827 to Shima (hereafter

Shima).

Regarding claims 7-9, Nasu doesn't mention whether the floppy disk data ECC

decoding "software instructions" are in "system BIOS" memory. Shima shows that

placing the code for a disk driver in "system BIOS" memory was well known and

conventional at the time the invention was made. It would have been obvious to a

person having ordinary skill in the art at the time the invention was made to implement

Nasu's disk data ECC decoding "software instructions" for the host in system BIOS.

Such an implementation would have been obvious because Shima shows that placing

a disk driver in system BIOS memory was already well known and conventional.

Regarding claim 10, a driver "expansion" in comparison with Nasu's prior art (Fig.

3) driver requirements is apparently required.

Regarding claim 12, in another embodiment (Fig. 1) a non-zero C2 syndrome

serves as an "error flag" sent to the host (10).

8.   Claims 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Hogan.

Regarding claim 4, Hogan doesn't specify hardware-based ECC encoding ("data

integrity determination information") for writing to the disk drive, although hardware-

based ECC decoding is required.

Official Notice is given that the hardware-sharing advantage of using a hardware-

based ECC encoder within a combined hardware-based encoder/decoder (*i.e.* using

codec hardware) where a hardware-based ECC decoder is already required was well known at the time the invention was made. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide Hogan's system with hardware-based ECC encoding for the disk drive. Such a provision would have been obvious because the hardware-sharing advantage of using codec hardware for required ECC encoding where a hardware-based ECC decoder is already called for was already well known.

Regarding claims 5 and 6, Hogan doesn't specify hardware-based error flag generation for indicating to the host that transferred data contains uncorrected errors. Official Notice is given that hardware-based error flag generation for indicating to the host that transferred data contains uncorrected errors was well known at the time the invention was made. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide Hogan's system with hardware-based error flag generation. Such a provision would have been obvious because hardware-based error flag generation for indicating to the host that transferred data contains uncorrected errors was well known.

9.   Claims 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hogan in view of Shima.

Regarding claims 7-9, Hogan doesn't mention whether the hard disk data ECC decoding "software instructions" are in "system BIOS" memory.

Shima shows that placing the code for a disk driver in "system BIOS" memory was well known and conventional at the time the invention was made. It would have

been obvious to a person having ordinary skill in the art at the time the invention was

made to implement Hogan's disk data ECC decoding "software instructions" for the host

in system BIOS. Such an implementation would have been obvious because Shima

shows that placing a disk driver in system BIOS memory was already well known and

conventional.

Double Patenting

10.   Claims 1-10 and 12 are provisionally rejected under the judicially created

doctrine of obviousness-type double patenting as being unpatentable over claims 1-14

of copending Application No. 09/374,081. The differences between the claims in the

present application and the copending application are apparently conceptually cosmetic

or are conventional in small computer systems.

This is a provisional obviousness-type double patenting rejection.

Conclusion

11.   Applicant's request for reconsideration of the finality of the rejection of the last

Office action is persuasive and, therefore, the finality of that action is withdrawn.

12.   The response filed 03 July 2003 was not accompanied by a Notice of Appeal and

so cannot be treated as an Appeal Brief. The response has been entered as an

amendment under § 1.111 instead.

13.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Stephen M. Baker whose telephone number is (703)

305-9681. The examiner can normally be reached on Monday-Friday (11:00 AM - 7:30

PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Albert DeCady can be reached on (703) 305-9595. The fax phone number

for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or

proceeding should be directed to the receptionist whose telephone number is (703) 305-

3800.
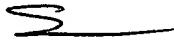
Stephen M. Baker
Primary Examiner
Art Unit 2133

smb